



Our Missouri Waters - Lower Grand River Watershed (HUC10280103)



Our Missouri Waters fact sheet

08/2013

The Lower Grand River Watershed in north-central Missouri is in an area of the state with water quantity problems, where drought conditions can threaten the drinking water supply for many communities. This watershed contains areas of diverse wet prairie and bottomland forest that are remnants of the natural wetland habitat once common in northern Missouri. The watershed also contains streams impacted by channelization, sedimentation, and nonpoint source runoff. The department is building partnerships to identify opportunities to address water quantity and water quality problems in this watershed.

The basin originates in southern Iowa and flows south through north central Missouri to its confluence with the Missouri River. The watershed includes:

- Portions of Putnam, Sullivan, Linn, Chariton, Carroll, Livingston, Grundy and Mercer counties.
- Towns of Milan, Marceline, Meadville, Brookfield and Brunswick.
- 1,509,632 acres (2,358.8 square miles).
- Land use: 53 percent grassland, 32 percent row crop, 14 percent forest.
- Population: 26,515 (11.2 per square mile); Year 2010 Census data.

Major streams in the watershed and stream miles

- Grand River; 56 miles.
- Locust Creek; 95 miles.
- East Locust Creek; 37 miles.
- West Locust Creek; 42 miles.
- Medicine Creek; 77 miles.
- Little Medicine Creek; 41 miles.
- East Fork Medicine Creek; 12 miles.
- Salt Creek; 20 miles.
- Yellow Creek; 28 miles.
- West Yellow Creek; 72 miles.
- East Yellow Creek; 54 miles.
- Elk Creek; 36 miles.
- Turkey Creek; 33 miles.
- Big Creek; 40 miles.
- Hurricane Creek; 16 miles.
- Muddy Creek (Linn County); 19 miles.



- Muddy Creek (Livingston, Grundy, Linn and Sullivan counties); 42 miles.
- Parson Creek; 39 miles.

Communities in the Lower Grand River Watershed

- Carroll County: Bogard, Bosworth, De Witt, Hale, Tina.
- Chariton County: Brunswick, Mendon, Rothville, Sumner, Triplett.
- Grundy County: Galt, Laredo.
- Linn County: Brookfield, Browning, Bucklin, Laclede, Linneus, Marceline, Meadville, Purdin.
- Livingston County: Chillicothe, Chula, Wheeling.
- Mercer County: Ravanna.
- Putnam County: Lucerne, Powersville.
- Sullivan County: Green City, Harris, Humphreys, Milan, Newtown, Osgood, Pollock.

Public Lands in the Lower Grand River Watershed

- Swan Lake National Wildlife Refuge; 11,025 acres; Chariton County.
- Fountain Grove Conservation Area; 7,486 acres; Linn and Chariton counties.
- Pershing State Park; 5,389 acres; Linn County.
- Locust Creek Conservation Area; 3,466 acres; Sullivan County.
- Bunch Hollow Conservation Area; 989 acres; Carroll County.
- Yellow Creek Conservation Area; 593 acres; Chariton County.
- Little Compton Lake Conservation Area; 344 acres; Carroll County.
- Floyd (Nannie B) Memorial Conservation Area; 19 acres; Chariton County.
- Gen. John J. Pershing Boyhood Home State Historic Site; 2 acres; Linn County.
- Locust Creek Covered Bridge State Historic Site; 42 acres; Linn County.
- Sears Community Lake; 87 acres; Sullivan County.
- Vandyke (Russell B., Hazel S. & Arnold L.) Conservation Area; 320 acres; Mercer County.

Public Water Supplies

- 30 public drinking water systems in watershed, majority rely on surface water.
- 4 have source water protection plans: Bosworth, Meadville, Carroll County #1, and Missouri-American Brunswick – these are all systems that get their water from wells.
- Surface water supplies: Elmwood Lake, Milan City Lake, Locust Creek, Brookfield Lake, and Yellow Creek.

Water Quality Monitoring

- Approximately 170 water quality sample data sites in Lower Grand River watershed in the department's database.
- FY 13: Quarterly grab samples at East Fork Locust Creek, Hwy 6 at Milan.
- FY 13: Fish tissue sample at Grand River at Brunswick.
- There are 11 stream teams that are from the watershed or have collected data from the watershed.

Point Sources of Pollution

There are approximately 124 point sources in the Lower Grand River Watershed. They include the following:

- 25 wastewater treatment facility discharges.
- 35 animal waste land application sites from Concentrated Animal Feeding Operations.
- 11 other land application sites.
- 49 stormwater discharges (agrichemical facilities, land disturbance, other).
- 4 other discharge (industrial, car wash, etc.).

Nonpoint Source Pollution

The most common sources are rural nonpoint sources and channelization. Streams on the 2012 303(d) list of impaired streams include impairment for high bacteria (*E. coli*), low dissolved oxygen and aquatic macroinvertebrate bioassessments. Impaired uses include Whole Body Contact Recreation (swimming), Secondary Contact Recreation and Protection of Aquatic Life (See Table).

2012 303 (d) impaired streams in the Lower Grand River Watershed

Stream	2012 303(d) impairment	Impaired miles	Impaired Uses	Existing TMDLs	Planned TMDLs
Locust Creek	E. coli	36.4 miles	Whole Body Contact, Secondary Contact Recreation.		E. coli
East Fork Locust Creek	E. coli Low Dissolved Oxygen	26 miles 13 miles	Whole Body Contact. Aquatic Life		E. coli Low Dissolved Oxygen
Medicine Creek	E. coli	36 miles	Whole Body Contact.	TSS	E. coli
Little Medicine Creek	E. coli Aquatic macroinvertebrate bioassessment	20 miles 40 miles	Whole Body Contact. Aquatic Life.	TSS	E. coli
Salt Creek	Low Dissolved Oxygen	14 miles	Aquatic Life.		Low Dissolved Oxygen
Grand River	E. coli	60 miles	Whole Body Contact, Secondary Contact Recreation.		E. coli

Department Studies in the Watershed

E. Coli Studies

- East Fork Locust Creek (2006) <http://dnr.mo.gov/env/esp/docs/E.LocustReport.pdf>.
- East Fork Locust and Locust Creek (2007) - http://dnr.mo.gov/env/esp/docs/07_E.LocustReport.pdf.

Bioassessment Studies

- East Fork Medicine Creek (2003-2005) - http://dnr.mo.gov/env/esp/docs/East_Fk_Medicine_Creek_Final_Report.pdf.
- West Fork Medicine Creek (2003-2005 and 2007-2008) - http://dnr.mo.gov/env/esp/docs/West_Fk_Medicine_Creek_Final_Report.pdf.
- West Fork Locust Creek (2007-2008; Linn and Sullivan counties) - http://dnr.mo.gov/env/esp/docs/WFkLocustCK_Bioassessment_Final_Report.pdf.
- West Locust Creek (2009-2010; Putnam County) - <http://dnr.mo.gov/env/esp/docs/WestLocust%20CreekFY2010BioReport.pdf>.

Recreational Use Attainability Analyses (2005-2008) -

<http://dnr.mo.gov/env/wpp/wqstandards/uaa/index.html>

- Hickory Branch http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_chariton.htm.
- East Yellow Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_linn.htm.
- West Yellow Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_sullivan.htm.
- Long Branch http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_linn.htm.
- Elk Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_linn.htm.
- Turkey Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_linn.htm.
- Muddy Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_linn.htm.
- East Fork Locust Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_sullivan.htm.
- West Fork Locust Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_sullivan.htm.
- Elm Branch http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_putnam.htm.
- Hurricane Creek http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_carroll.htm.
- Muddy Creek (Linn Co); http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_linn.htm.
- Barber Creek; http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_sullivan.htm.
- West Fork Medicine Creek.

Total Maximum Daily Load Studies

Completed

- West Fork Locust Creek (TSS, Total Nitrogen, Total Phosphorus, Unknown Pollutants); 2010 <http://dnr.mo.gov/env/wpp/tmdl/0613-w-fk-locust-ck-record.htm>.
- Medicine Creek (TSS); 2006 <http://dnr.mo.gov/env/wpp/tmdl/0619-e-fk-medicine-ck-record.htm>.
- Little Medicine Creek (TSS); 2006 <http://dnr.mo.gov/env/wpp/tmdl/0623-l-medicine-ck-record.htm>.

Planned

<http://dnr.mo.gov/env/wpp/tmdl/wpc-tmdl-progress.htm>

- Grand River, Locust Creek, East Fork Locust Creek, Little Medicine Creek, Medicine Creek (*E.coli*); 2013.
- East Fork Locust Creek (Low Dissolved Oxygen); 2018.
- Salt Creek (Low Dissolved Oxygen) 2023.
- West Fork Locust Creek (Low Dissolved Oxygen and Unknown causes); 2018.

USGS Gage Stations-Real Time Flow Data

- USGS 06901250 Little East Locust Creek near Browning
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06901250&PARAMeter_cd=00065,63160,00060

- USGS 06901500 Locust Creek near Linneus
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06901500&PARAMeter_cd=00065,63160,00060
- USGS 06899680 Grand River at Chillicothe
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06899680&PARAMeter_cd=00065,63160,00060
- USGS 06899900 Medicine Creek at Lucerne
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06899900&PARAMeter_cd=00065,63160,00060
- USGS 06900050 Medicine Creek near Laredo
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06900050&PARAMeter_cd=00065,63160,00060
- USGS 06900640 Muddy Creek near Chula
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06900640&PARAMeter_cd=00065,63160,00060
- USGS 06902000 Grand River near Sumner
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06902000&PARAMeter_cd=00065,63160,00060
- USGS 06902100 Grand River below Sumner (auxiliary gage)
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06902100&PARAMeter_cd=00065,63160,00060
- USGS 06902995 Hickory Branch near Mendon
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=06902995&PARAMeter_cd=00065,63160,00060

319 Projects in the Lower Grand River Watershed - previous 10 years

- Installation of rock grade control structures in avulsion between Higgins Ditch and Locust Creek and rock diversion structure in Higgins Ditch; 2008-2012 (\$108,695 from Oct. 2008 through June 2012).
- Endocrine Modulators and Excess Nutrients in Little Medicine Creek and West Locust Creek; 2003-2007.
- Trenton and Princeton Student Watershed Festivals; 2004-2005.
- Grundy County Abandoned Well Education and Assistance; 2007-2008.

For More Information

For more information about Our Missouri Waters initiative and the Lower Grand River Watershed project, or to provide comments and suggestions about water resource issues in the Lower Grand River Watershed, contact the department's northeast regional watershed coordinator, Mary Culler.

Missouri Department of Natural Resources - Northeast Regional Office
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Or on the Web at dnr.mo.gov/omwi.htm

Also, check out the project **Facebook page** at **Our Missouri Waters Lower Grand River Watershed Initiative**.